REMARKS

The Office Action of April 23, 2010 has been received and carefully considered. However, Applicant respectfully disagrees with Examiner's rejections. In this Amendment, Applicant has added Claims 16 – 20 to further specify the embodiments of the present invention. It is respectfully submitted that no new matter has been introduced by the new claims. All claims are now present for examination and favorable reconsideration is respectfully requested in view of the preceding amendments and the following comments.

REJECTIONS UNDER 35 U.S.C. § 102:

Claims 1, 3 and 9 have been rejected under 35 U.S.C. § 102 (b) as allegedly being anticipated by Noble et al. (US Patent No. 2,995,453), hereinafter Noble.

Applicant traverses the rejection and respectfully submits that the presently claimed invention is not anticipated by the cited reference. More specifically, Noble does not disclose or suggest "at least 0.01% by weight of a water soluble salt to convert the trivalent or tetravalent cations to moieties that are unable to cause flocculation of the slurries."

The Examiner alleges that mono-aluminium phosphate is a water soluble salt as claimed by the present application. Applicant respectfully submits that this is incorrect because it is well known to a person of ordinary skill in the art that "mono-aluminium phosphate" is NOT water soluble. Enclosed for Examiner's reference is a copy of page B-68 of The Handbook of Chemistry and Physics, published by CRC Press, Inc, which confirms the insolubility of aluminium phosphate in water. The Handbook of Chemistry and Physics is a well known and authoritative reference book on the physical and chemical properties of materials. In addition, this property of insolubility has commercial applications. For example, water soluble aluminium salts, such as the sulphate and

chloride, has been used to remove dissolved phosphates from waste water (see Chemifloc attachment). Thus, the alleged disclosure of water solution in Noble is incorrect.

In addition, the Examiner has not shown that the alleged water soluble salt – mono-aluminium phosphate is in the concentration of "at least 0.01% by weight" and is able "to convert the trivalent or tetravalent cations to moieties that are unable to cause flocculation of the slurries." According to MPEP 2143.03, "[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Further, the Examiner explained that "the zircon has a mesh size of less than 350 **reading on** finely divided particle at a concentration of at least 0.01 wt%." As stated above and defined in Claim 1, the concentration of at least 0.01 wt% is related to the water soluble salt, NOT the "mineral." The Examiner appears to have misunderstood the invention and misinterpreted specific claim languages. Thus, zircon disclosed in Noble does not read on the claimed feature of the present invention.

Therefore, the newly presented claims are not anticipated by prior art including Noble and the rejection under 35 U.S.C. § 102 (b) has been overcome. Accordingly, withdrawal of the rejection under 35 U.S.C. § 102 (b) is respectfully requested.

REJECTIONS UNDER 35 U.S.C. §103:

Claim 9 has been rejected under 35 U.S.C. §103 as allegedly being unpatentable over Noble in view of Yates et al. (US 3,650,783).

Applicant traverses the rejection and respectfully submits that the embodiments of present-claimed invention are not obvious over the cited prior art references. At first, it is respectfully submitted that there are significant differences between the embodiments of the present invention and the disclosures in Noble, as indicated above.

Applicant respectfully submits that, according to the present invention, alkaline silica sol slurries, which by their very nature are unstable unless their pH is between 9.5 and 10.5, are destabilized by the presence of trivalent cations such as those found in many minerals. The conventional methods for resolving this problem are to remove such cations by acid washing, which an expensive and polluting process, or by using slurries made from coated silica sol particles, which is the most expensive process.

The present invention solves this problem cheaply and elegantly by using e.g. a trialkali metal phosphate to "fix" the trivalent cation, such as Fe^{III}, in minerals that would otherwise have destabilized the most common silica sols used in slurries. This allows cheaper minerals to be used and is an extremely low cost solution compared to those mentioned above.

It is obvious to anyone skilled in the art that if such a solution had previously been available in the marketplace, the expensive sols described by Noble and Yates would have been of little interest and probably not have been found worthy of being commercialized.

It is respectfully submitted that there is no motivation to combine Noble with Yates. Even if they are combined, they will not render the present claimed invention obvious. One of ordinary skill in the art would not discern the present invention as claimed at the time of its invention.

Therefore, the rejection under 35 U.S.C. §103 has been overcome. Accordingly, withdrawal of the rejections under 35 U.S.C. §103 is respectfully requested.

Having overcome all outstanding grounds of rejection, the application is now in condition for allowance, and prompt action toward that end is respectfully solicited.

Respectfully submitted,

JACOBSON HOLMAN PLLC

By JCHolman
John C. Holman
Registration No. 22,769

Date: October 19, 2010
(202) 638-6666
400 Seventh Street, N.W.
Washington, D.C. 20004
Atty. Dkt. No.: P68780US1

Enclosures:

A copy of page B-68 of The Handbook of Chemistry and Physics, published by CRC Press, Inc (1 page)

Webpage Printout from Chemifloc – Chemical Application in Water Treatment (2 pages)

No.	Name	Synonyms and Formulae	Mol. wt.	Crystalline form, properties and index of refraction	Density or spec. gravity	Melting point, °C	Boiling point, °C	Solubility, in grams per 100 cc: Cold water	Hot water	Other solvents
	Aluminum									
a44	nitrate	$Al(NO_3)_3.9H_2O$	375.13	col, rhomb, deliq, 1.54		73.5	d 150	63.7^{25}	v s d	100 al; s alk, HNO₃, a
a45	nitride	AlN	40.99	wh cr, hex	3.26	>2200 (in N_2)	subl 2000	d (NH_3)	d	d a, alk
a46	oleate (com'l)	$Al(C_{18}H_{33}O_2)_3(?)$	871.37	wh powd, existence doubted except as basic salt				d	s	i al; v sl s bz
a47	oxalate	$Al_2(C_2O_4)_3.4H_2O$	390.08	wh powd				i	i	i al; s a
a48	oxide	Al_2O_3	101.96	col, hex, 1.768, 1.760	3.965^{25}	2045	2980	i		v sl s a, alk
a49	oxide	α-Alumina, nat. corundum, Al_2O_3	101.96	col, rhomb cr, 1.765	3.97	2015 ± 15	2980 ± 60	0.000098^{29}	i	v sl s a, alk
a50	oxide	γ-Alumina, Al_2O_3	101.96	wh micr cr, 1.7	3.5–3.9	tr to α		i	i	sl s a, alk
a51	oxide, monohydrate	$Al_2O_3.H_2O$	119.98	col, rhomb, 1.624 ± 0.003	3.014			i	i	
a52	oxide, trihydrate	Nat. gibbsite, hydrargillite, $Al_2O_3.3H_2O$	156.01	wh monocl cr, 1.577, 1.577, 1.595	2.42	tr to $Al_2O_3.H_2O$ (Boehmite)		i	i	s h a, alk
a53	oxide, trihydrate	Nat. bayerite, $Al_2O_3.3H_2O$	156.01	wh micr cr, 1.583	2.53	tr to $Al_2O_3.H_2O$ (Boehmite)		i	i	s hot a, alk
a54	metaphosphate	$Al(PO_3)_3$	263.90	col, tetr	2.779			i	i	i a
a55	palmitate, mono- (com'l)	$Al(OH)_2C_{16}H_{31}O_2$	316.41	wh	1.095	200		i		s alk, hydrocarb
a56	1-phenol-4-sulfonate	$Al(C_6H_5O_4S)_3$	546.49	redsh-wh powd				s		s al, glyc
a57	phenoxide	$Al(C_6H_5O)_3$	306.27	grayish-wh cr mass	1.23	d 265		d		s al, eth
a58	orthophosphate	$AlPO_4$	121.95	wh rhomb pl, 1.546, 1.556, 1.578	2.566	>1500		i	i	s a, alk
a59	propoxide	$Al(C_3H_7O)_3$	204.25	wh cr	1.0578^{20}_{4}	106	248^{4}	d	d	s al
a60	salicylate	$Al(C_7H_5O_3)_3$	438.33	redsh-wh powd				i		i al; s alk
a61	selenide	Al_2Se_3	290.84	lt brn powd, unstable in air	3.437^{1}_{4}			d	d	d a
a62	silicate	Nat. sillimanite, andalusite, cyanite, $Al_2O_3.SiO_2$	162.04	wh, rhomb, 1.66	3.247	1545 tr to $3Al_2O_3.2SiO_2$	>1545	i	i	d HF; s fus alk
a63	silicate	Nat. mullite, $3Al_2O_3.2SiO_2$	426.05	col, rhomb, 1.638, 1.642, 1.653	3.156	1920		i	i	i a, HF
a64	stearate, tri-	$Al(C_{18}H_{35}O_2)_3$	877.42	wh powd	1.010	103		i		s al, bz
a65	sulphate	$Al_2(SO_4)_3$	342.15	wh powd, 1.47	2.71	d 770		31.3^{0}	98.1^{100}	s dil a
a66	sulfate, hydrate	Nat. alunogenite, $Al_2(SO_4)_3.18H_2O$	666.43	col, monocl, 1.474, 1.467, 1.483	1.69^{17}	d 86.5		86.9^{0}	1104^{100}	i al
a67	sulfide	Al_2S_3	150.16	yel, hex, odor H_2S, d moist air	2.02^{13}	1100	subl 1500 (N_2)	d		s a; i acet
a68	thallium sulfate	Aluminum thallium alum, $AlTl(SO_4)_2.12H_2O$	639.66	col, oct, 1.49112	2.325^{22}_{4}	91		1.84^{0}	65.19^{100}	
a69	**Americium**	Am	243.13	silvery, hex		994±4	2607 (extrap)			s dil a
a70	bromide	$AmBr_3$	482.84	wh, orthorhomb		subl		s		
a71	chloride	$AmCl_3$	349.49	pink, hex	5.78	subl 850		s		
a72	fluoride	AmF_3	300.13	pink, hex	9.53			i		
a73	iodide	AmI_3	623.84	yel, orthorhomb	6.9			s		
a74	oxide	Am_2O_3	534.26	redsh-brn, cub or tan, or hex						s min a
a75	oxide, di-	AmO_2	275.13	blk, cub	11.68					s min a
a76	**Ammonia**	NH_3	17.03	col gas; liq, 0.817^{-79}, $1.325^{...}$	0.7710 g/l 760 mm	−77.7	−33.35	89.9	7.4^{96}	
a77	Ammonia-d_3	Trideuterio ammonia, ND_3	20.05			−74	−30.9			
	Ammonium									
a78	acetate	$NH_4C_2H_3O_2$	77.08	wh cr, hygr	1.17^{20}	114	d	148^{4}	d	
a79	acetate, hydrogen	$(NH_4)H(C_2H_3O_2)_2$	137.14	col need, deliq		66		s		s al
a80	aluminum chloride	$NH_4Cl.AlCl_3$	186.83	wh cr		304		s		
a81	aluminum sulfate	$NH_4Al(SO_4)_2$	237.14	col, hex	2.45^{20}			s		s glyc

Chemifloc
Chemical Manufacturers

Chemical Applications

Chemical Applications in Water Treatment

Application	Solution
	Coagulant-Aluminium Sulfate
	Chemifloc 101
Colour and Turbidity	Chemifloc 103
	Ferric Sulfate
	Polyaluminium Chloride
Settlement	Flocculant-Polyelectrolyte
Fluoridation	Hydrofluosilicic Acid
Sterilisation	Sodium Chlorite
	Soda Ash
	Lime
pH Adjustment	Caustic Soda
	Sulphuric Acid
Taste and Odour Control	Activated Carbon
Sludge Dewatering	Flocculant-Polyelectrolyte

Chemical Applications in Waste Water Treatment

Application	Solution
Sludge Dewatering	Flocculant-Polyelectrolyte
	Coagulant-Aluminium Sulfate
	Ferric Sulfate
Phosphate Removal	Ferric Chloride
	Ferrous Sulfate
	Ferrous Chloride
	Phosfloc
	Lime
pH Adjustment	Soda Ash
	Caustic
	Sulphuric Acid
Sulphide Control	SOC-Sewage Conditioning Agent
	Coagulant-Aluminium Sulfate
Settlement	Ferric Sulfate
	Flocculant-Polyelectrolyte
Odour Control	Activated Carbon
	SOC
Nitrification	Bacteria-BI-CHEM 1010N

Foaming	Anti-Foam
Improve BOD and COD Removals	Bacteria-BI-CHEM 1008SF
Masking Odours	Nodorol
Sludge Bulking	Bulkfloc

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